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10/509,745	09/30/2004	Yuko Kawaguchi	2004_1492A	4363

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WENDEROTH, LIND & PONACK, L.L.P.
2033 K STREET N. W.
SUITE 800
WASHINGTON, DC 20006-1021

EXAMINER	
HEYI, HENOK G	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/509,745	KAWAGUCHI ET AL.	
	Examiner	Art Unit	
	HENOK G. HEYI	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 12/05/2007 have been fully considered but they are not persuasive. Contrary to applicant's argument, Toshiyuki teaches an information storage area (11B, para [0019]) and a separate information storage pit (14) which could be considered as a sub-information area (see Fig. 7).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 21-22, 25-32 and 36-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroaki et al., JP 2001-229542 (Hiroaki hereinafter), in view of Toshiyuki, JP 2000-011453.

Re claim 21, Hiroaki teaches an optical recording medium (Fig. 3) comprising: a main-information area in which a metal reflection film is formed on a substrate where a row of pits is formed as main data (Fig. 2), and in which information is to be reproduced by irradiating said metal reflection film with a beam of light; a sub-information area in which medium identification information is to be recorded by removing said metal reflection film partially so as to form a plurality of reflection-film removed areas (the main information field which can record an information signal, and said information signal are

divided and equipped with the subinformation field which records the subinformation from which a class differs in the direction of 1 principal plane of a substrate, para [0014]); but he does not teach about track pitch size. However, Toshiyuki teaches that information is reproduced by irradiating the metal reflection film with a beam of light, characterized in that, in the sub-information area, a row of pits or a groove is formed on the substrate, and the track pitch of the row of pits or the groove is 0.24μm or wider and0.45μm or narrower (the track pitch is set to 0.27μ – 0.404μm, para [0004]). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the optical recording medium of Hiroaki to include sub-information area with pits and grooves and also having track pitch in the specified range as taught by Toshiyuki. The modification would have been obvious because of the benefit of increasing the linear density.

Re claim 22, the combined teachings of Hiroaki and Toshiyuki teach the optical recording medium according to claim 21 but fail to teach a reflectance ratio of said metal reflection film is at least 35% and at most 70% with respect to a beam of light whose wavelength is 405 nm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have film thickness in this range to control the reflectance ratio since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Re claim 25, Toshiyuki teaches the optical recording medium according to claim 21, wherein if a wavelength of a beam of light of a light source used to irradiate said metal

reflection film is λ, and a refractive index of a resin layer which is formed on said metal reflection film is n, then a depth D of said row of pits or said guide groove formed on the substrate in said sub-information area satisfies a relational expression of λ / (6xn) ≤ D ≤ λ / (3xn) (From the push pull signal in the push pull method well known for lambda/8 as one of the servo systems of a tracking error growing into the maximum. To be these ranges are demanded and it is set to 680/4/1.5=113nm to 635/8/1.5=57nm from this about the long wave length of 680 nm of the red laser mentioned above, and the short wavelength of 635 nm. That is, in this invention, depth D of a pit may be 57 nm - 113 nm, Para [0026]).

Re claim 26, Toshiyuki teaches the optical recording medium according to claim 21, wherein a depth of said row of pits formed as the main data is equal to a depth of said row of pits or said guide groove formed on the substrate in said sub-information area (see para [0004] and [0026]).

Re claim 27, Toshiyuki teaches the optical recording medium according to claim 21, wherein a track pitch of said row of pits formed as the main data is at least 0.24μm wide and at most 0.431μm wide (0.27 μm – 0.404 μm, para [0004]), and a shortest pit of said row of pits formed as the main data is at least 0.12μm long and at most 0.21μm long (0.13 - 0.219para [0004]).

Re claim 28, Toshiyuki teaches the optical recording medium according to claim 21, wherein a track pitch of said row of pits formed as the main data is equal to a track pitch of said row of pits or said guide groove formed on the substrate in said sub-information

area (the light transmission layer 12 is formed on the information storage side 11A where the information storage pit 13 was formed in one field of the substrate 10, para [0009]).

Re claim 29, Toshiyuki teaches the optical recording medium according to claim 28, wherein the track pitch of said row of pits formed as the main data and the track pitch of said row of pits or said guide groove on said substrate in said sub-information area are each at least 0.241 μm wide and at most 0.431μm wide (0.27 μm – 0.404 μm, para [0004]).

Re claim 30, Toshiyuki teaches the optical recording medium according to claim 21, wherein the optical recording medium is a multi-layer optical recording medium, and said metal reflection film comprises a plurality of laminated metal reflection films (an information storage side is laminated via an interlayer according [1st at least one or more information storage sides and the 2nd information storage side] to a light transmission layer respectively, and an optical recording medium by this invention comprises this light transmission layer side, Para [0006]).

Re claim 31, Toshiyuki teaches the optical recording medium according to claim 21, wherein a track pitch of said row of pits or said guide groove on the substrate in said sub-information area is at least 0.30 μm wide and at most 0.40 μm wide (0.27 μm – 0.404 μm, para [0004]).

Re claim 32, Hiroaki teaches recording medium identification information, to be used to identify the optical recording medium individually, by partially removing said metal

reflection film in said sub-information area so as to form a plurality of reflection-film removed areas (the main information field which can record an information signal, and said information signal are divided and equipped with the subinformation field which records the subinformation from which a class differs in the direction of 1 principal plane of a substrate, para [0014]) but he does not teach about track pitch size. However, Toshiyuki teaches a method for manufacturing an optical recording medium, comprising: preparing a substrate on which a row of pits is formed as main data in a main-information area (the information storage side 11A where the information storage pit 13 was formed in one field of the substrate 10 by plastic plate, metal substrate, a glass substrate, etc., para [0009]), and on which a row of pits or a guide groove having a track pitch that is at least 0.241 μm wide and at most 0.451 μm wide is formed in a sub-information area (0.27 μm – 0.404 μm, para [0004]); forming a metal reflection film on said substrate (a reflection film is secured, para [0033]); forming a resin layer on said metal reflection film (form this light transmission layer 12, spreading of resin and adhesion of a resin sheet can be considered, para [0036]). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the optical recording medium of Hiroaki to include sub-information area with pits and grooves and also having track pitch in the specified range as taught by Toshiyuki. The modification would have been obvious because of the benefit of increasing the linear density.

Re claim 36, Toshiyuki teaches the method according to claim 32, wherein preparing a substrate on which a row of pits is formed as main data in a main-information area, and

on which a row of pits or a guide groove having a track pitch that is at least 0.24μm wide and at most 0.45μm wide is formed in a sub-information area, comprises preparing said substrate such that if a wavelength of a beam of light of a light source used to irradiate said metal reflection film is λ, and a refractive index of said resin layer is n, then a depth D of said row of pits or said guide groove formed in said sub-information area satisfies a relational expression of $\lambda/(6xn) \leq D \leq \lambda/(3xn)$ (From the push pull signal in the push pull method well known for lambda/8 as one of the servo systems of a tracking error growing into the maximum. To be these ranges are demanded and it is set to 680/4/1.5=113nm to 635/8/1.5=57nm from this about the long wave length of 680 nm of the red laser mentioned above, and the short wavelength of 635 nm. That is, in this invention, depth D of a pit may be 57 nm - 113 nm, Para [0026]).

Re claim 37, Toshiyuki teaches the method according to claim 32, wherein preparing a substrate on which a row of pits is formed as main data in a main-information area, and on which a row of pits or a guide groove having a track pitch that is at least 0.24μm wide and at most 0.45μm wide is formed in a sub-information area, comprises preparing said substrate such that a depth of said row of pits formed as the main data is equal to a depth of said row of pits or said guide groove formed in said sub-information area (see para [0004] and [0026]).

Re claim 38, Toshiyuki teaches the method according to claim 32, wherein preparing a substrate on which a row of pits is formed as main data in a main-information area, and on which a row of pits or a guide groove having a track pitch that is at least 0.24 μm wide and at most 0.45 μm wide is formed in a sub-information area (0.27 μm – 0.404

μm, para [0004]), comprises preparing said substrate such that a track pitch of said row of pits formed as the main data is at least 0.24 μm wide and at most 0.43 μm wide, and a shortest pit of said row of pits formed as the main data is at least 0.12 μm long and at most 0.21 μm long(0.13 - 0.219para [0004]).

Re claim 39, Toshiyuki teaches the method according to claim 32, wherein preparing a substrate on which a row of pits is formed as main data in a main-information area, and on which a row of pits or a guide groove having a track pitch that is at least 0.24 μm wide and at most 0.45 μm wide is formed in a sub-information area (0.27 μm – 0.404 μm, para [0004]), comprises preparing said substrate such that a track pitch of said row of pits formed as the main data is equal to the track
pitch of said row of pits or said guide groove formed in said sub-information area (the light transmission layer 12 is formed on the information storage side 11A where the information storage pit 13 was formed in one field of the substrate 10, para [0009]).

Re claim 40, Toshiyuki teaches the method according to claim 32, wherein preparing a substrate on which a row of pits is formed as main data in a main-information area, and on which a row of pits or a guide groove having a track pitch that is at least 0.24 μm wide and at most 0.45μm wide is formed in a sub-information area (0.27 μm – 0.404 μm, para [0004]), comprises preparing said substrate such that said row of pits as the main data and said row of pits or said guide groove in said sub-information area are formed simultaneously (and has been arranged in a molding metal mold simultaneously with the molding, The so-called formation of the information storage pit 13 mentioned

above to the field which is one side, for example, and also a groove is made, Para [0009]).

Re claim 41, Hiroaki teaches recording medium identification information, to be used to identify the optical recording medium individually, by partially removing said metal reflection film in said sub-information area so as to form a plurality of reflection-film removed areas (the main information field which can record an information signal, and said information signal are divided and equipped with the subinformation field which records the subinformation from which a class differs in the direction of 1 principal plane of a substrate, para [0014]) but he does not teach about track pitch size. However, Toshiyuki teaches a reproducing method for an optical recording medium, said optical recording medium including (i) a main-information area in which a metal reflection film is formed on a substrate where a row of pits is formed as main data (the information storage side 11A where the information storage pit 13 was formed in one field of the substrate 10 by plastic plate, metal substrate, a glass substrate, etc., para [0009] and a reflection film is secured, para [0033]), and (ii) a sub-information area in which formed on the substrate is a row of pits or a guide groove having a track pitch that is at least 0.24gm wide and at most 0.45gm wide (0.27 μm – 0.404 μm, para [0004]); said method comprising: reproducing information by irradiating said metal reflection film with a beam of light (the laser beam which performs reproduction or/, and record is entered from this light transmission layer 12 side, para [0013]). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the optical recording medium of Hiroaki to include sub-information area with pits and grooves and

also having track pitch in the specified range as taught by Toshiyuki. The modification would have been obvious because of the benefit of increasing the linear density.

4. Claims 23-24 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroaki and Toshiyuki as applied to claim 21 and 32 above, and further in view of Takeshi, JP 2001-216686.

Re claim 23, Hiroaki and Toshiyuki teach the optical recording medium according to claim 21 having a metal reflection film, but the combined teaching of Hiroaki and Toshiyuki fail to teach said metal reflection film is made of Ag or an Ag alloy material, and a film thickness of said metal reflection film is at least 25nm and at most 70nm. However, Takeshi teaches a metal reflection film made of Ag or an Ag alloy material and the metal reflection film's thickness (para [0016]). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the optical recording medium of Hiroaki to have specific thickness for the metal reflection film. The modification would have been obvious because of the benefit of reflection film thickness in absorption of the disc.

Re claim 24, Hiroaki and Toshiyuki teach the optical recording medium according to claim 21 having a metal reflection film but the combined teaching of Hiroaki and Toshiyuki fail to teach said metal reflection film is made of Al or an Al alloy material, and a film thickness of said metal reflection film is at least 15nm and at most 40nm. However, Takeshi teaches a metal reflection film made of Ag or an Ag alloy material and the metal reflection film's thickness (para [0004] and para [0019]). It would have been obvious for one of ordinary skill in the art at the time the invention was made to

modify the optical recording medium of Hiroaki to have specific thickness for the metal reflection film. The modification would have been obvious because of the benefit of reflection film thickness in absorption of the disc.

Re claim 33, Hiroaki and Toshiyuki teach the optical recording medium according to claim 21 having a metal reflection film but the combined teaching of Hiroaki and Toshiyuki fail to teach forming a metal reflection film on said substrate comprises forming on said substrate a metal reflection film having a reflectance ratio of at least 35% and at most 70% with respect to a beam of light whose wavelength is 405nm. However, Takeshi teaches a metal reflection film made of Ag or an Ag alloy material and a thickness range of 5-30nm which is between 35 to 70 percent (para [0019]). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the optical recording medium of Hiroaki to have specific thickness for the metal reflection film and specific reflectance ratio. The modification would have been obvious because of the benefit of reflection film thickness in absorption of the disc.

Re claim 34, Hiroaki and Toshiyuki teach the optical recording medium according to claim 21 having a metal reflection film but the combined teaching of Hiroaki and Toshiyuki fail to teach forming a metal reflection film on said substrate comprises forming on said substrate a metal reflection film made of Ag or an Ag alloy material and having a film thickness of at least 25nm and at most 70nm. However, Takeshi teaches a metal reflection film made of Ag or an Ag alloy material and the metal reflection film's thickness (para [0016]). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the optical recording medium of Hiroaki to

have specific thickness for the metal reflection film. The modification would have been obvious because of the benefit of reflection film thickness in absorption of the disc.

Re claim 35, Hiroaki and Toshiyuki teach the optical recording medium according to claim 21 having a metal reflection film but the combined teaching of Hiroaki and Toshiyuki fail to teach forming a metal reflection film on said substrate comprises forming on said substrate a metal reflection film made of Al or an Al alloy material and having a film thickness of at least 15nm and at most 40nm. However, Takeshi teaches a metal reflection film made of Ag or an Ag alloy material and the metal reflection film's thickness (para [0004] and para [0019]). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the optical recording medium of Hiroaki to have specific thickness for the metal reflection film. The modification would have been obvious because of the benefit of reflection film thickness in absorption of the disc.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENOK G. HEYI whose telephone number is (571)270-1816. The examiner can normally be reached on Monday to Friday 8:30 to 6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Henok G Heyi/
Examiner, Art Unit 2627